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ART. I.—NOTES ON THE TREATMENT OF CHRONIC PLEURISY, WITH EFFUSION.¹

BY THE LATE JAMES HOPE, M. D.

The following paper must possess a high interest for our readers, when we inform them that it was commenced by Dr. Hope during his last illness, and concluded on his death bed. Unable to complete it as he could have wished, he was compelled to dictate it in the shape of notes, which he finished only four days before his decease. To those who knew Dr. Hope well, this zeal for science and his fellow-creatures will occasion no surprise. It was consistent with the character of the man, who died as he had lived, an accomplished physician and a good man.

The symptoms of chronic pleurisy, with effusion more or less filling one side of the chest, are perfectly well described by systematic authors, as Dr. Law, (*Cyclop. Pract. Med.* p. 395 a.) yet there is no class of affections more habitually overlooked by the bulk of the profession than this—certainly one of the most destructive to life if neglected beyond a certain period. I am glad to notice that Dr. Stokes makes a similar remark. Some fault attaches indeed to the systematic writers alluded to, for their mistaking the state of anæmia, with its quick pulse, for irritative fever, by which they not only mislead themselves, but also their readers, as to the nature of the patient's condition, and, consequently, as to the appropriate means of cure. It has resulted from this, that a far too unfavourable impression of the curability of chronic pleurisy with effusion, or empyæma, as it is called after a certain time, has become prevalent. Dr. Law thinks more favourably of the possibility of cure. He with justice, however, excepts tubercular cases, and those in which the patient is not assisted; yet I think that he is mistaken in supposing that a copious evacuation from some other organ may not occasionally prove critical, and empty a chest. A case occurred to me in which absorption did not commence so soon as I expected; namely, within a week, when the patient was attacked with hypercatharsis to the amount of sixty watery evacuations in two days. The chest, meanwhile, which was dull within two inches of the left clavicle, and had the heart protruded to the right side of the sternum, had completely emptied itself, and the patient recovered.

Broussais met with only one favourable case out of eighteen. Laennec's view was equally gloomy, and Dr. Townsend's is no less so; Dr. Thomas

¹ *Medico-Chirurgical Review*, July, 1841, p. 295.

Davies feels the same so strongly, that he hurries on the operation of paracentesis at a very early period of the disease—a circumstance which is the main cause of the unusual success of the operation in his hands. From this aggregate of unfavourable opinions it results that, at the present time, there is a prevalent doubt whether the fluid of empyæma is ever absorbed. This fluid, it may be remarked in passing, may be either sero-fibrinous and albuminous, or contain pus in any degree up to its pure condition. This seems to be now a settled question, and I think it ought to be so, as the fluid, in healthy subjects, kills not by its quality, but by suffocating.

I cannot feel surprised at this want of success in the cure of empyæma, when I notice the unsettled, vacillating, inadequate treatment recommended even by those writers who think most favourably of the possibility of a cure.

Dr. Law's treatment comes nearest to that which I have found effectual, but he is too timid in continuing the gentle use of mercury, from fear of its inducing irritative fever and hectic. This supposed irritative fever, however, is, in most cases, nothing more than excitement of anæmia, (a fact of which he does not seem to be at all aware, as even in the convalescent period he does not even name iron as a remedy,) and the hectic is a necessary consequence when the fluid is pus, and this is diffused through the whole circulation by the process of absorption. I have steadily continued the gentle external use of mercury through the most violent hectic, coming on twice a day in tremendous paroxysms; while I have counteracted this by the free use of mineral acids; and by a diet, not only of strong broth at luncheon, but of animal food at dinner—the patient's tongue being clean, and his appetite and digestion always good.

Dr. Townsend seems principally to follow Broussais (phlegmasie chronique) and Laennec, neither of whom make use of mercury, and the former would only venture on a blister as an experiment! He likewise falls into their great error of mistaking anæmia for fever, and therefore starves the patient at a moment when there is a great demand for animal nutriment in any way in which it can be borne. The treatment of Dr. Thomas Davies is that of calomel and opium, and counter-irritants in the first stage, but he thinks these inefficient in the stage of chronic effusion. He therefore, as already stated, hurries on the operation of empyæma. The writer on pleurisy in the *Library of Practical Medicine* (Vol. III. p. 124) seems to have but an indifferent opinion of the curability of chronic pleurisy with effusion. After the third week or so, he thinks mercury of little benefit, and that it is even injurious when the hectic stage comes on; but approves of counter-irritants, and follows Dr. Stokes in his approbation of the use of the hydriodate of potass, to act both as an alterative and a diuretic; also of the iodide of iron.

Dr. Stokes, whose writings on pleurisy I had not the pleasure of seeing till long after I commenced my own observations, I find to be far the most successful in his treatment of chronic pleurisy and empyæma. In an excellent chapter, containing a considerable portion of original matter—some, perhaps, a little fanciful—he mentions that he cured twenty cases running by the use of a pint daily of cold solution of Lugol's iodine, and from a quarter to half an ounce of the ointment rubbed into the side. He is likewise very favourable to the use of blisters.

I have myself been instrumental in curing five and thirty cases consecutively, during the space of four years, but principally two years and a half, while I was assistant-physician to St. George's Hospital, no cases having been withdrawn, or added from an anterior date, except three; the 1st was Mr. Garnett, whom I saw about 1833, who had also fatal ulceration of the bowels; the 2d, the Rev. Mr. —, whom I saw about 1833; the 3d an out-patient of St. George's, whom I found to have tubercular disorganisation of the lungs, and whom I, therefore, transferred to Dr. McLeod, as an in-patient of St. George's. Paracentesis was practised; the tubercles were found; and he died from inextension of the lung, which was bound down to the spine.

The remainder of the cases all dated within three months, as well as I could make out by most carefully catechising the patient respecting the first feeling of pleuritic pain, or ailment of any kind. The pain was frequently forgotten, until the patient was perhaps asked whether he had not had a little lumbago, pain in the back, &c. Nor is this surprising; for copious effusion very soon relieves pleuritic pain. A very great proportion dated within two months, and from that time down to three weeks or a month. I seldom saw them earlier than a month, as they were either neglected and misunderstood cases amongst the out-patients of St. George's, or private patients whom I was called to see in consultation at a late period of the disease; the complaint of the latter having, with few exceptions, been also overlooked.

The following is a list of the previous duration of the disease in all my private cases, amounting to seventeen; but I lament to say that I cannot at present give the dates of those, eighteen in number, who were out-patients of St. George's, and the notes of whose cases I drafted out of 15,000 notes of cases, which I saw at St. George's (for I took notes of almost all). The notes of these eighteen cases having been separated from the others, I have unfortunately mislaid them. Unless, therefore, I recover them, I must trust to the confidence of the public for the accuracy of the facts. They were all demonstrated, as they occurred, to the students of St. George's.

Coachman of Sir Clifford Constable's, ill a fortnight, but previous bronchitis.

Miss Caldow, ill from two to three weeks.

Robert Watts, ill eighteen days.

Mr. Smith, ill three weeks.

Mr. Tapson, ill a month.

Patrick Millerick, ill a month.

Mr. Eade, ill five weeks.

Mr. Garnett, ill six weeks.

Henry Wade, ill two months.

Mr. Downing, ill two months.

Aldersgate street student, under Mr. —, for supposed phthisis—had supposed lumbago nine weeks before.

Miss Miller, disease of ten weeks' standing for two months.

The Rev. Mr. Barter, two months and a half, but previous pneumonia.

Mr. Hamilton, ill three months.

Eliza Gray, ill three months.

Mr. Morgan, stitch in back three months before. Ill ever since.

The Rev. Mr. —? ill upwards of three months.

As I have not leisure to continue this paper at present, I subjoin the following memoranda of how I shall proceed, if time permit.¹

The private cases being in great detail, and in general features greatly resembling each other, it would be useless to give the whole in full. Therefore pick out a few which give at length, as general types—for instance, Miss Miller, Mr. Morgan, and Sir Clifford Constable's coachman—the remainder insert in an abbreviated form, together with such of the out-patients of St. George's as I can recall to memory, though I have lost the notes of their cases.—Show that I used mercury in all degrees of intensity, so as to ascertain what quantity was the most effectual, but, at the same time, least injurious.—Show that I always used opium, in full proportion, with the mercury, and that I used the milder and the external forms when the others could not be borne—thus taking *especial* care to protect the mucous membranes.—Add that I found prompt and free salivation by calomel and opium, and the use of one or two drams of ointment on each groin and axilla night and morning for forty-eight hours, (in conjunction with the other remedies presently to be specified,) produce the most rapid and satis-

¹ It will be observed that, from this point, the form of private notes is adopted.

factory effects of absorption, in cases where the dyspnœa and faintness seemed to me most urgent and dangerous. It was quite common, and, in fact, occurred in the majority of cases, that the fluid descended one third, and still oftener one half, down the chest, within the space of forty-eight to sixty hours, carrying with it the extreme dyspnœa and faintness, to the great relief of the patient.

Say that blisters were used from the first, and that the following became my settled plan of managing them. One blister six inches long and three and a half broad, exclusive of margin, was placed longitudinally over, and a little to the outside of the angles of the ribs, leaving space for another of similar size between the first and the spine. Great care was taken not to remove the cuticle, (one means of which was to cover the surface of the blister with silver paper,) as this forms by far the quickest healing plaster; but after about forty-eight hours, during which the running was absorbed by dry napkins, carefully prevented from adhering, it became requisite to cover the whole with the mildest soap-plaster, spread on soft calico, to prevent the cuticle from being accidentally abraded. In this way all irritation promptly subsided, that is, in the course of from two to three days, and the patient was ready for the second blister, which was placed between the first and the spine. It was similarly treated; and, at an equal interval, a third was placed in front of the original one; that is, rather forward in the axilla. When pain indicated the possibility of a pleuritic stitch in any part of the side, it is needless to say that the first blister was placed over that.—Say that diuretics are conjoined: viz. squill; sp. æth. nit.; juniper; iodide of potassium, and, when there is no irritation of the mucous membrane, the various other preparations of potass. Digitalis, by creating faintness, is apt to confuse the symptoms; I do not, therefore, use it till later. When all these remedies had failed for two or three days, and dyspnœa continued as urgent as ever, I have occasionally used a powerful hydragogue, as half a grain to a grain of elaterium, combined with calomel and capsicum to prevent nausea; or the pulv. jalap comp. ʒj.; so as to produce ten or twelve copious watery evacuations per day, stimulants being at hand in case of any sinking tendency. The effect of this has on several occasions been perfectly satisfactory, absorption in the chest having now made rapid progress. I derived this idea from a case already alluded to, in which a patient had an accidental hypercatharsis to the amount of sixty stools in two days, which emptied the chest in the same space of time. The patient is better in bed, both because it favours gentle transpiration, and obviates faintness.

Remind that, hitherto, I have been treating a case in which the dyspnœa seemed eminently dangerous, and the most vigorous use of remedies consequently indispensable; but now explain that inconvenience sometimes resulted from hypersalivation; for, notwithstanding an immediate suspension of the mercury either on the first appearance of tenderness of the gums, or of amelioration of the symptoms—especially the dyspnœa and obvious commencement of absorption—untoward salivation would occasionally occur, and greatly retard the convalescence. Explain that, on several times observing this, and having reason to believe that the patient could bear the dyspnœa with safety for some hours longer, provided he were prevented from rising, which creates faintness, (case of Mr. Smith, barrister,) I used more moderate quantities of mercury, being content to affect the gums within three or four days. In this way, the action of the remedy was easily controlled, either by omitting the mercury for two or three days, if its action threatened to be considerable, or by merely diminishing it according to the evidence of the mouth and of the symptoms. I found, however, that it did not answer to suspend it altogether, but that a continuation of it daily in a mild form, as a blue pill night and morning, or at night only, for the purpose of maintaining the first impression for a period of two or three weeks, or, in short, until all the disagreeable symptoms had disappeared—was attended with far better success. Explain, further, that the great acceleration of pulse, which

rises commonly to 120 or 130, and in young persons even to 150 or 160, and which is attended with what the patient calls "internal fever," thirst, craving for cold drinks, and dryness and heat of skin, is not necessarily a result of fever, but it is necessarily a result of anæmia, occasioned by the deficiency of oxygenation from the total incapacity of one lung at least. Here was the error made by Broussais, who supposed this to be fever, and put his patient on the lowest diet. On the contrary, acting on the opposite principle, I always supply my patients with at least one or two pints of concentrated beef tea, or plain ox-tail soup; and if the state of the tongue and the alimentary canal fully authorises it, I permit them tender old mutton or beef for dinner. On this treatment, the pulse and "internal fever" rapidly fall in proportion as the anæmia disappears.

Next proceed to those cases in which hectic is established, resulting for the most part, I should imagine, from the fluids being of a puriform character—for after a month or six weeks, and sometimes much earlier, if the inflammation have been very intense, it assumes this character. Allude to the opinion pretty prevalent that mercury is injurious in such cases, and say that I have not found it so, but that its use was still indispensable: for I have noticed that where it has been omitted, contrary to my wishes and instructions, a recurrence of the effusion has taken place, notwithstanding the use of mineral acids and the various other remedies usually considered available against hectic; whereas, on resuming mercury with opium, and giving the mineral acids for hectic, I have been enabled to restore matters to their former condition, though not without an extra shake to the patient. One of the best instances of this was presented by Sir Clifford Constable's coachman. Dwell on this case; say that, after acute pleurisy of three weeks I saw him, and the chest was emptied in a week, but the mercury ordered to be continued. This, on my taking my leave, was omitted; and as he seemed weak, (*viz.* merely from anæmia,) he was ordered ammonia, brandy, and other stimulants. In ten days, when I was again called in, his chest had refilled, and he now had a most violent hectic paroxysm at eleven o'clock, A. M., and again at 11 P. M. Each of these thoroughly drenched him, and during the extreme heat the pulse would rise to 150, being also barely perceptible. In this, I saw nothing but a large quantity of pus in the circulation, which nature was endeavouring to throw off in her usual manner. I believed, in short, that the fluid in the chest was wholly purulent. I therefore continued the mercury and blisters in moderation, and made free use of the mineral acids, which, fortunately, he bore perfectly well. During the brief intervals of the hectic paroxysms, he exhibited that marked relief which we habitually see, and had always a keen appetite for his meals. He accordingly took as much mutton-chop, beef-steak, or roast or boiled mutton, as he was inclined to take. Under this treatment, the chest was again emptied within the space of ten days; the hectic symptoms slowly gave way during a period of a month or six weeks, and I dismissed him convalescent to go to the country. I may add, however, that when the hectic was nearly gone, sulphate of iron was added to his sulphuric acid, in order to co-operate with the animal food in removing all remains of anæmia.

Dwell likewise on the case of Mr. Morgan, æt. about 20, who was not only highly hectic, but had also slight gastro-enteritis. I continued the gentle external use of mercury, allayed the irritation of the mucous membrane by mild antiphlogistic means, &c., but allowed him plain veal and chicken broth, then beef tea and mutton broth, in such quantities as I found he could bear. The gastro-enteritis having been thus pretty well subdued, he became tolerant of the mineral acids and sulphate of iron, well guarded with laudanum. His youth rendered the progress of absorption more rapid than in the preceding case, for the fluid all disappeared within ten days, with entire relief to his dyspnoea; and so great a restoration resulted from the new supply of oxygen and removal of anæmia, that a week afterwards he came in a cab from the city to the West-end to call upon me.

Auscultators should be careful not to throw away their chances by neglecting to use the stethoscope. In one instance, an accomplished physician, having examined the top of the lung and found it dull, with the other usual signs of induration, without following up his examination down the whole side, took the case for phthisis, and ordered the patient to the southern coast. A common friend having mimicked to me the mode of breathing of the patient, I declared at once, (for his imitations were most graphic,) that such was not the dyspnoea of phthisis; and as I knew him not to be a phthisical subject, and to have been in robust health two months before, I entreated of our friend to go down to the patient in the country the same afternoon, and not to let him stir (for he was to start two days after) without a consultation of physicians. I declined going myself, as having suggested the measure. Answer was returned that if I would not go, he would see no one else, as he had originally intended to have consulted me. I saw him, and found what I was before sure of: namely, that the whole side was full of fluid, indicated by the usual symptoms, including anæmia and the physical signs. I flattered him that we should empty the chest within a week or ten days, and that he would be convalescent, *deo volente*, in a month. So it happened, though mercury could only be borne externally, and that with great reluctance on the part of the patient. His convalescence was somewhat protracted, in consequence of the irritable state of the mucous membranes rendering them incapable of bearing the animal diet, and ferruginous preparations suitable for the removal of the anæmia. He had flying pains principally below the region of the heart, but these ceased under the use of plasters, especially belladonna; and he has enjoyed perfect health for the past year.

In the great majority of cases, an attrition murmur, (always most perceptible along the line of the margin of the lungs from the heart, curling backwards to the bottom of the lower lobe; in other words, below the axilla,) was found to appear as the fluid disappeared by absorption. I have noticed that the longer this attrition murmur lasts, the better; as the adhesions are more apt to be of a loose and elongated character, which I infer from the patient's recovering complete resonance on percussion, and complete restoration of respiratory murmur sooner than in other cases where the attrition murmur lasts but a few days, in consequence, probably, of the adhesions becoming universal and close. Whenever the latter is the case, the patient may lay his account to being more or less delicate for a year and a half or so, because the lung requires fully this time slowly to stretch the adhesions, to reacquire her natural respiratory murmur; or, if this should never occur, for the patient to gain a compensation by hypertrophy of the opposite lung, which, meanwhile, has constantly been doing vicarious duty; namely, breathing in an exaggerated or puerile manner. These exquisite arrangements of Providence cannot be sufficiently admired. The more we look into them, the more complete we find them.

The lung sometimes remains permanently condensed, from the thickness and utter inextensibility of the side; and dilatation of the bronchi may result from this cause, of which I have met with and detected four or more instances. Condensation of this kind is less frequently attended with falling in of the side than in cases of pleurisy; for the opposite lung slowly becomes hypertrophous and fills up the vacant space, advancing, however, into the opposite side of the chest, and carrying the heart with it in either direction. Thus, in Peter Parker, an out-patient of St. George's, the heart is protruded almost into the right axilla, and the aorta pulsates an inch to the right of the sternum. Lung condensed by adhesion, is rarely healthy. There is almost invariably a slow, wearing, chronic bronchitis, which harasses and reduces the patient, and generally curtails his existence. Parker had had his cough for ten years, and he was an emaciated and decrepid subject.

Here introduce a number of detached observations, more or less original,

on various subjects. Thus, for eight or ten years, I have been in the habit of asking the question of all respectable patients of robust constitutions, who had been attacked with pleurisy, peripneumony, acute rheumatism, whether they were in the habit of wearing flannel, or not; to which they generally answered in the negative—the common reason assigned being, that they were so much exposed, that they could not venture to pamper themselves. I recently put the same question to a London physician, and he gave the same answer with a smile, and “my dear friend, it is impossible,” &c. He was attacked with rigors the same night, and had a severe rheumatic fever. I do not quote the poorer classes, for they, almost universally, are deterred from wearing flannel by the expense, and it is notorious that they are subject to acute inflammations of all kinds, in a much greater proportion than the higher classes. Flannel is also highly beneficial to chronic affections of the mucous membrane of the lungs.

Pleurisy is, after rheumatic fever, one of the most frequent causes of pericarditis—not endocarditis, at first—the inflammation being propagated to the pericardium by contiguity of tissue: if endocarditis supervene, it is by propagation from the peri to the endo-cardium.

Diaphragmatic pleurisy may occasion agonising pain by interfering with the action of so great a muscle as the diaphragm. It is in such cases that we occasionally see the patient put on what is called the sardonic grin—a species of sympathetic spasm dependent on the excito-motory system and nerves.

In some convenient part of the paper, give a brief and compact, but very clear synopsis of the signs of a chest full of fluid. For I repeat that, well as these are known to systematic writers, they are singularly forgotten and overlooked by practitioners. They ought, therefore, to be pushed prominently forward on every occasion. Refer likewise to a synopsis of the signs of anæmia in the essay on that subject; by which the practitioner will readily distinguish this condition from that of fever, for which it has been mistaken by Broussais and others.

Wind up by a general statement, that, if Dr. Stokes has cured twenty cases running by Mons. Lugol’s solution and ointment of iodine, together with blisters and other means; and I have cured thirty-three consecutive cases by other means; fifty-three cases cured successively, without selection, afford a strong presumption that all really *curable* cases are curable without paracentesis. It remains to be proved by experience whether iodine or mercury be the less injurious to the constitution. I have myself the most favourable opinion of the harmlessness of the iodide of potassium when protected by starch—that is, a little bread with each dose; for I made the experiment of giving eight-grain doses against three-grain doses, in two hundred cases, for the purpose of ascertaining which dose was the most efficacious. The larger, both being given thrice a day, succeeded incomparably the better, and I now rarely give the smaller.

I have met with seven or eight cases of circumscribed pleurisy, and whenever a chronic pleurisy becomes very protracted, I am not sorry to see a purulo-sanguineous discharge take place periodically, as it generally does, into the bronchial tubes; for in this case a slow process of healing generally occurs, and the patient, in a fair proportion of cases, recovers. I have recently discharged one, Henry Wade, who appeared to me to have had a chronic pleurisy engrafted on a previous circumscribed or sacculated one. The history of the chronic one is developed in my journal in the utmost detail; but the patient also informed me that some months before he had been under the care of a physician in Norfolk, who had treated him for six months previously for a discharge of half a pint of pus, mixed with blood, expectorated once a day from the bronchial passages. After this time, he sent him to London to consult me, and I found him with a very circumscribed empyæma that he might have had, obscured by general empyæma. This having been removed, the original circumscribed empyæma pointed at

the chest, and discharged by two or three apertures. When the discharge was free by the apertures, it was correspondingly diminished by the bronchial tubes. Both slowly decreased. The circumscribed empyæma seemed to descend very low in the splenic region, and after nine months of hospital attendance as an in-patient, he was dismissed without discharge, with slight cough and in general good health, his weight being at least twelve stone, though a moderate-sized man.

I discharged a patient from the Mary-le-bone Infirmary, cured six times of circumscribed empyæma above the left mamma, and opening into the bronchi. At the end of six months he was completely well.

In another, in the Mary-le-bone Infirmary, the whole length of a probe could be passed directly into the chest. He recovered, but with much collapse of one side.

A third, in the Mary-le-bone Infirmary, a boy of eighteen, had effusion for six months. My colleagues, in consultation, had given their opinion that he was tubercular. The operation of paracentesis, therefore, was negatived. The opposite lung was soon after attacked with peripneumony, and he died, when the exemption from tubercles was proved. I did not then understand an efficient treatment for fluid in the chest; and was therefore an advocate for the early operation on the principle of the late Dr. Thomas Davies, of Broad street. I had much regret, therefore, respecting this case, that the operation had not been performed. One feature was remarkable. Andral, Broussais, and others, recommend that patients in chronic pleuritis should be kept on light diet. This youth ate twelve ounces of dressed meat at dinner; eight ounces at breakfast, with two eggs; tea and milk *ad libitum*; sixteen ounces of bread daily.

Numerous similar cases show that nature's mode of performing the operation is incomparably more safe than paracentesis.

ART. II.—ON THE PATHOLOGY, PHYSICAL SIGNS, AND TREATMENT OF VALVULAR DISEASES OF THE HEART, IN CONNECTION WITH THE SOUNDS OF THIS ORGAN.¹

BY T. H. MOORE, M. R. C. S.

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The following case, which has lately come within the range of my observation, I have been induced to give, not merely from the intrinsic value it possesses as being linked with the others, by the symptoms, physical signs, and morbid appearances, but also on account of other particulars, which cannot fail to sanction its introduction here.

A woman, advanced in years, the mother of four children, was brought into the hospital, on the morning of the 16th of May, with both legs, feet, and thighs immensely swollen, presenting a florid red, glossy, erysipelatous hue, nearly as high up as the knees; pitting on pressure; of such weight that it was with pain and much difficulty they could be moved. There was an expression of great distress and anxiety in her countenance; lividity of the lips and cheeks; a tinge of bile on the conjunctiva; turgescence of the jugular veins, with distinct undulatory or pulsatory motions, very remarkable for the regularity of their succession in those of the right side of the neck. No degree of uniformity between them, the cardiac impulses, and the arterial pulsations, could be ascertained with precision, or in a satisfactory manner; their persistence, whether in erect or recumbent posture, was noted;

¹ London Medical Gazette, June, 1841, p. 542.

with a diminution in their strength, and almost total disappearance on the left side, in the former position. Her breathing is laboured to an extreme degree, accompanied with extraordinary action of the thoracic muscles; rattling in the trachea and thorax, sensible to the ear and touch. She sits propped up in bed, and obtains but short interrupted intervals of sleep; has lost her appetite; passes but a small quantity of urine, and is irregular in her bowels.

Physical Signs of Chest and Heart.—Percussion over and beyond the limits of cardiac region elicits a very dull sound, extending beyond the sternum to the right side; the heart's impulses can be felt in the cardiac region, not violent nor forcible; on the contrary, weak, but tolerably extensive, the shock being communicated to the touch over a less circumscribed space than that observed in health. A strong vibratory thrill is imparted to the palm of the hand, proceeding from the vibration of air and mucus in the bronchial tubes, intermixed with that resulting from the blood's passage through the cavities of the heart. During the act of suspending the respiration, the sounds of this organ, previously inaudible, and altogether obscured by the respiratory phenomena, became so far distinct, that their action was reported to be extensively heard. Beneath the mammæ, and within the precincts of the præcordial region, the first and second sounds, the entire of the heart's rhythm, are so much confused, masked, or replaced by a constant loud whizzing or rasping murmur, that it is impossible to distinguish between them individually, or recognise them collectively: with each impulse and ventricular contraction it commences, and progresses with briskness, roughness, harshness; and at the moment it should cease with the diastole of the heart, and the second sound succeed, a repetition of these physical signs takes place: a retroceding, regurgitating, whizzing murmur, less vigorous, less forcible in its intensity, and possessing less of those characteristic features of the former, becomes developed, and is communicated to the ear; at the termination of which the heart's impulse succeeds, the ventricular contraction follows, accompanied by the rushing or whizzing murmur, not unlike the sound produced by the rasping of the crust of bread, occupying the entire of the first sound, masking the second, and obliterating the interval which naturally intervenes. At the upper part of the sternum, and under the clavicles, the second sound is audible, though feeble; not so clear, having lost much of its energy, and not possessing that sharp, well-defined "claquement" so peculiar to it. Each arterial and valvular "clack" is preceded by a bellows murmur, regular in its succession, and constant in its intensity, but less distinct than that heard in the præcordial region; seemingly continuous with, or a prolongation of, these sounds, and gradually diminishing as we approach the fourchette of the sternum. Pulse 96, full and regular, counted in carotids; it cannot be felt at the wrist on account of the œdema; percussion over the posterior part of the right side is dull; the physical signs indicate, in addition to acute bronchitis, extensive congestion and œdema of the pulmonary tissue, with an accumulation of fluid in the left pleural cavity.

The abdomen is swollen, from the quantity of fluid in the peritoneal sac, a sense of fluctuation is afforded on percussion, and the true condition of the abdominal viscera rendered difficult to ascertain. The liver feels hard, enlarged, indurated; its sharp edge thickened and rounded. The intestines are distended with flatus.

History.—For two years she has been subject to a chronic catarrh, and has for many months suffered from pains in the left side, palpitations, flutterings, and other symptoms of deranged circulation; the distress occasioned by the dyspnœa, violent palpitations excited by very trivial causes, agonising pains, and præcordial oppression, has been much increased within the last few months. The swellings appeared for the first time six weeks since, in the feet and legs, spreading upwards towards the thighs and abdomen,

finally extending over the upper extremities, and producing that state of misery in which she was brought into hospital.

Two days after this report was taken she died.

Autopsy.—The serous cavities of the abdomen and chest, left pleura in particular, contained light straw-coloured fluid; the quantity in the former exceeding four or five quarts; that in the latter, a pint.

The heart, when exposed by laying open the pericardium, occupied the mesial line, and encroached considerably on the right pleural cavity, in consequence of its enormous dimensions from the increased capacity of the right ventricle and auricle; on its anterior surface is one of those white patches so frequently seen, occupying in its extent the circumference of half a crown. The veins are enormously turgid, those on posterior aspect, traversing from base to apex, particularly so. The heart is very flabby. The exterior of the right ventricle, which is considerably augmented in its transverse and perpendicular diameter, presents a yellowish marbled colour, traversed by turgid bloodvessels; whilst the left, comparatively small, affords a specimen of two rare pathological alterations. As the heart lay in the pericardium, two circumscribed purplish or livid patches attracted our notice; one situated about an inch and a half, the other a few lines, from the apex. The superior one larger, in close proximity to the septum, does not exceed the size of a sixpence; whilst the smaller of the two might be covered by a fourpenny piece. The pericardium corresponding to each is more opaque and dense than that covering the rest of the ventricle. Two distinct indentations, similar to those which may be produced by punching in the muscular substance of the ventricle with the knuckle of the forefinger, were visible on the anterior part of the left ventricle; corresponding to which, and the dark-coloured patches, the muscular fibres of this cavity were so thin and attenuated, that the interior of the ventricle could be felt by the introduction of the finger into either of these depressions or indentations. On first inspection, it was supposed a perforation had occurred near the apex; such, however, was not the case. By examining from the interior of the ventricle, it was evident that, from the absorption and attenuation of the muscular fibres of the ventricles interposed between the endo and pericardium, two pouches had formed, which, when distended with blood, or protruded by means of the finger, constituted two circumscribed true aneurisms of the ventricle; in one of which was contained a dark-coloured fibrous coagulum, being entangled between the fleshy columns encircling the sac, and distinct from other coagula in the ventricle.

The pericardium can be detached with the greatest facility, and removed from the surface of both ventricles, by exerting a slight degree of traction. The muscular substance of the ventricle, excepting the two places described, is hypertrophied, but of a pale colour, separable into distinct laminæ by making a transverse section, raising the fibres, and drawing them from apex to base; thus three, four, or even more plates, or layers of fleshy fibres, can be removed, pale and flabby, but increased in thickness.

It seems probable that the cellular tissue separating the muscular fibres had become infiltrated with serum, participating in the œdematous condition of the cellular tissue diffused over the body; such a supposition becomes justified, from the colour of the right ventricle appearing to originate in a sub-pericardiac infiltration into the cellular tissue, scattered amongst and serving to connect the muscular fibres together—from the muscular fibres themselves being flabby and attenuated—the fleshy columns being thin and numerous—and from these not being sufficient to account for the tumefied appearance and obvious augmentation in the volume of this viscus.

The auricles, right and left, more especially the former, are increased in the capacity of their chambers to double or treble their usual size. Venæ cavæ dilated, gorged with blood; coats somewhat thickened; parietes of auricles hypertrophied; appendices enlarged, and muscoli pectinati

lengthened; the endo-cardium of the left is increased in density, opaque, and easily detached from the muscular fibres.

The right auriculo-ventricular aperture is of enormous size, dilated to nearly double its general measurement. The tendinous ring is sufficiently distinct. The tricuspid valves are inadequate to effect the closure of the orifice, two thirds being thickened, in their perpendicular measurements, with fibrous prominences on their surfaces and borders. The left auriculo-ventricular aperture and mitral valves are similarly affected, but not to the same amount.

The pulmonary valves are healthy; those of the aorta of a deeper red in their colour, but retaining their transparency; a slight increase in their density was noticed. The calibre of the arch is dilated. Steatomatous depositions pervade the interior of the aorta, and may be seen in greatest number at some distance from the valves. Not far removed from one of these, there has been deposited a quantity of fibrin beneath the serous, between it and the muscular coat. Advancing from the ascending and transverse portions of the aorta, the coats were found more healthy.

The superior parts of the pharynx and larynx are of a deep red, approaching to a purple hue. The epiglottis less elastic than natural; its mucous membrane of a violet colour, thickened, and velvety feel. The rima glottidis appears narrowed in its antero-posterior diameter; no ulceration could be detected.

Head.—From three to four ounces of limpid serum was effused between the arachnoid and dura mater, also between the arachnoid and pia mater; abundant at the base of the brain, at the superior part of the spinal column, and in the vertebral theca.

In the floor of the third ventricle, anterior and inferior to the orifice of the *iter a tertio ad quartum ventriculum*, a second orifice, distinct, smooth, and circular, attracted my attention in this, as well as on two previous occasions, in brains not affected by disease. Into this orifice the point of an ordinary sized director can be introduced, which, taking the course of the canal, proceeds upwards and backwards, beneath the floor of the aqueduct of Sylvius, and that of the fourth ventricle, on the superior surface of the pons varolii. Passing downwards and backwards between the processes a cerebello ad testes, still preserving the mesial line, it gradually contracts in size, and seems to terminate in a species of cul-de-sac, at a short distance above the posterior spinal fissure, with which it was at first supposed to be continuous; but more minute examination did not ratify this supposition, as the continuation of the canal could not be satisfactorily ascertained. On three separate occasions have I been foiled in tracing a direct communication between the two, and establishing an immediate connection of one with the other, but have succeeded in observing that a minute fissure leads from the apparent termination of the canal. This canal, when laid open in its entire extent, from the floor of the third ventricle, posterior to the infundibulum, to its termination behind, describes a curvilinear course, is circular in its calibre, and presents a smooth, polished, glistening internal surface, being lined throughout its entire extent by serous membrane; its parietes, varying from one to two lines in thickness, consist of a layer of cineritious and medullary substance, inclosed between two laminæ of serous membrane.

OBSERVATIONS.—It is unnecessary to remark, that we possess in this case more than an ordinary amount of instruction; but in commenting on some of the leading features during life, and the pathological changes observed in the autopsy, it will be more profitable to inquire in a cursory manner—

1st, Into the similarity existing between the symptoms, physical signs, and pathology of this case, and those noticed in others, as illustrative of the disease under consideration.

2d, Into the probability of those physical signs having originated in, and being produced by, the aneurisms of the ventricle, and the liability of the one being mistaken for, and confounded with, the other, from such coincidence.

3d, Whether the attenuation of the parietes of the ventricle in those two circumscribed spaces, which was conducive to the formation of the aneurismal pouches, resulted from an inflammatory attack of the muscular structures, preceded, was coeval with, or consequent upon the morbid changes, progressing in the valvular structures.

From the combination of two circumstances, permanent patency of the auriculo-ventricular apertures resulted—first, from a dilatation, an increase in the circumferences of the orifices; secondly, from retraction of the valvular tissues, and consequent deficiency in their length; diseases in themselves sufficient to account for the presence of the physical signs—the masking of the entire of the heart's rhythm, heard in the præcordial region, by a loud whizzing murmur or constant buzz. But herein we are enabled to detect a very striking dissimilarity between the auscultatory phenomena and those recorded in the preceding cases; inasmuch as, at no period of the examination, nor by resorting to those manœuvres and experiments, as far as her deplorable condition permitted, were we able to observe a remission or intermission in the vigour, the intensity, the regularity and asperity of those phenomena, so obvious and so constant in the others, as to be considered one of the characteristics of this disease, and deemed almost pathognomonic of its existence.

We have recorded, it is true, a marked difference between the harshness and loudness of the abnormal murmur accompanying the ventricular contraction, and that heard during its diastole. In the description given, it has been noted, that the sound communicated to the ear gave origin to the idea that “the retroceding, regurgitating whizzing murmur, less vigorous, less forcible in its intensity, and possessing less of the characteristic features of the former,” (*vide* report of physical signs, &c. &c.) proceeded from a reflux of blood through the auriculo-ventricular orifices.

That this description, though virtually correct, must be at variance with our physiological knowledge of the succession of phenomena composing the heart's rhythm, and if not commented on, must lead to confusion, requires not a second consideration; instead, therefore, of being led astray by the sounds communicated to the ear, and attributing this train of phenomena to the regurgitated current produced during the ventricular contraction, and in conjunction with the aneurismatic condition of the left ventricle, chiefly instrumental in causing the loud rasping murmur, we must in preference ascribe it to the succeeding column of blood, passing over an uneven, roughened surface, immediately after the subsidence of the muscular contraction; continuing during the diastole of the ventricles; occupying the heart's interval of repose; being propelled forward in part by the action of the auricles, but chiefly by its own unopposed gravity.

Let us now inquire whether these aneurisms were antecedent to, coeval with, consequent on, or subsequent to, the disease of the valves. The two first inquiries may be disposed of by our confessing that, through want of a sufficient number of cases and consequent experience, a perfect silence must be maintained; but in objecting to trace their origin to, and refusing to acquiesce in any opinion which may attribute these aneurisms to a disorganisation of the valves, it is but right to state that this opposition has been grounded on, and the inference drawn from, the extreme rarity of the coexistence of these affections, which, if viewed in the light of cause and effect, ought to retain a greater comparative frequency than has hitherto been recorded.

In searching after the predisposing and determining causes of this disease, pathological examination and ocular demonstration direct our attention to the existence of acute inflammation of the serous and muscular structures of this viscus at some previous period; but in recalling to mind the different divisions of inflammation; the various changes effected by each, in different parts of the animal economy; the hardening and softening; the thickening and thinning; the increase and decrease of volume, in organs whose struc-

tures accurately correspond, we must revert to the effects of that slow, insidious, subacute inflammatory process on other parts of this organ, to be enabled to offer a satisfactory explanation.

During the progress of this inflammatory action, we have had frequent opportunities of attesting that the muscular fibres become weakened and flabby; decreased in bulk and energy; yielding during this atrophying process to the force of the circulating current; and dilating the cavities, in thus yielding during each act of propelling the blood into the arterial system. From an excess of innervation; from a predominance of this enfeebled, thinned, attenuated condition of the fibres in two or more circumscribed spaces, and their consequent inability to offer further resistance to the circulating column of blood, they either give way, are absorbed, or form on various portions of the heart's surface those aneurismal sacs, into the interior of which, the blood entering as it passes through the cavity of the ventricle, a gradual distention of its walls takes place, until in the course of time it may have attained a size equaling the normal dimensions of the heart.

That these pouches did not originate in rupture, nor ulceration of the fibres, consequent on the formation of an abscess in the substance of the ventricle, may be inferred from the uninterrupted continuity of the fibres after the removing of the lining membrane of the aneurism, the endocardium ventricle, and there being none of the distinguishing marks of a former abscess.

I can well conceive that if this aneurismal affection of the parietes of the ventricle had existed *per se*, and the auriculo-ventricular valves had remained sound, we should have had symptoms precisely the same, and physical signs differing but slightly from those described, as the attendant phenomena of permanent patency of the apertures, with morbid growths or excrescences on the surface of the valves.¹

BIBLIOGRAPHICAL NOTICE.

*Rigby's Midwifery.*²

The advent of the volume before us was announced in a late number of this Journal. It was published in London as a part of Tweedie's "Library of Medicine," and is certainly equal to any of the volumes that have preceded it. It is written sensibly and clearly, and the author is aware of most that has been done in the important department of medical science embraced by it. We can, consequently, strongly recommend it to the practitioner and student. The general anatomy and physiology of utero-gestation and foetal existence are ably treated—subjects sadly neglected in many of our obstetrical works. But few of the diseases of the childbed state are touched upon—they are puerperal fevers, phlegmatia dolens, and puerperal mania.

The work is divided into five parts:—Part I. Embracing the Anatomy and

¹ We have taken the liberty of considerably shortening this paper: if the reader should perceive any want of perspicuity, he will, therefore, please to attribute it to us.—*Ed. Gaz.*

² *A System of Midwifery, with numerous wood-cuts.* By Edward Rigby, M. D., Physician to the General Lying-in-Hospital, Lecturer on Midwifery at St. Bartholomew's Hospital, &c. &c. With notes and additional illustrations. 8vo. pp. 491. Philad. 1841.

Physiology of Utero-gestation; Part 2. Natural Pregnancy and its deviations; Part III. Eutocia or Natural Parturition; Part IV. Midwifery Operations; and Part V. Dystocia or Abnormal Parturition.

MISCELLANEOUS NOTICES.

*Dr. Mandl on the Chemical Analysis of the Blood in a Pathological State.*¹—Dr. Mandl has contributed three very elaborate papers to the Archives de Medicine, for the latter months of last year, on this very difficult but very important and interesting subject.

The *first* is occupied with a review of the numerous, and from their discordance often bewildering, statements of different chemists and physiologists as to the composition and the relative qualities of the most obvious constituents of the blood—the fibrine, the globules, and the serum. There is still much contrariety of opinion on this subject, and we are far from having arrived at any recognised exactitude of knowledge. Perhaps the very attempts which have been made of late years, since chemistry has made so much progress, to obtain too minute analyses of the animal fluids, has retarded and impeded our progress in our physiological acquaintance with them, alike in a healthy and in a morbid condition. To be a useful animal chemist, the experimenter must be a practical physician at the same time; and we cannot expect to obtain any important results, unless the various changes, which are induced on the fluids by disease, are attentively examined and duly appreciated by the bedside of the patient, as well as afterwards in the laboratory. To select one out of many proofs that *mere* chemistry can do but little for humoral pathology, we may allude to the circumstance of the two principles, albumen and fibrine, being recognised to consist of the same chemical elements in nearly the same proportions, while at the same time every one knows how different are the phenomena which they exhibit in the chemistry of the living body. And if we wished to show the discrepancy of authors on the relative proportions of the different elements of the blood during health, we have only to mention that, according to Lecanu, there are about three parts of fibrine in one thousand parts; whereas Berzelius estimates the proportion at less than one part; Fourcroy, as varying from 1 to 4; Davy, as $1\frac{1}{2}$; Nasse, as $2\frac{1}{2}$; Müller, at nearly 5 (in the blood of the ox); and MM. Andral and Gavarret, at 3. Well, therefore, may Professor Giacomini assert in a recent paper, (v. Gazette des Hôpitaux, No. 20, 1840,) that “if we compare the numerous tables on the composition of the blood, published in works on chemistry, we do not find two that are not at variance.”

If from the chemical analysis we proceed to the physiological interpretation of that most common phenomenon, the coagulation of the blood, we find as much discordancy of opinion as on the relative proportion of the fibrine. Some have attributed it altogether to the blood being at rest, and have therefore ascribed its fluidity to the circumstance of it being constantly in motion during life. But how then shall we explain the fact of the entire mass remaining perfectly fluid within the vessels in some cases of sudden death, and of the contents of a vein or artery in any intermediate portion of the tube between two ligatures, and thus kept in a state of complete repose, not becoming coagulated?

Others have sought for a reason of the phenomenon in the refrigeration of the blood when it is drawn from the body. But numerous experiments have

¹ Medico-Chirurgical Review, July, 1841, p. 178.

shown that this idea is quite untenable; seeing that the process actually goes on more quickly if the temperature of the blood is kept to the heat of the living body, and that, on the other hand, it is considerably retarded if the temperature is much reduced. Hewson has even proved that the blood after being frozen and again thawed will coagulate, as usual, into a solid and a fluid portion.

Then as to the influence of the atmosphere on the process of coagulation, various experiments have been at different times made to ascertain the effects of withdrawing its pressure, by introducing a vessel full of fresh-drawn blood under the bell of an air-pump; but hitherto no satisfactory conclusions have been drawn from these experiments; different results having been obtained by different men.

Then again, it has been supposed by some that the coagulation of the blood out of the body is somehow connected with, if not dependent upon, the disengagement of gaseous elements from its mass. Home and Scudamore have, for example, attached much importance to the escape of carbonic acid; but Dr. Davy has subsequently denied its influence altogether; and, indeed, might we not well ask, how does the blood not every moment coagulate in the lungs, seeing that there is a constant evolution of this very gas during respiration?

Dr. Mandl sums up his observations on this subject in these words:—"What then, up to the present moment, is the result of all the chemical experiments which have been made to explain the coagulation of the blood? None, absolutely none. How are we to account for the blood, contained in the jugular vein of a dog, rabbit, remaining liquid for some hours in a portion of the vessel which has been separated from the rest by means of two ligatures, and subsequently removed from the body of the animal? The coagulation is retarded under such circumstances by cold. But when the vein is opened, the blood coagulates in the course of two or three minutes. Now how are we to explain these phenomena? We must confess that we are utterly unable to do so. This experiment is quite conclusive against the idea that coagulation is owing to the blood being at rest, as well as against that which attributes it to the influence of refrigeration."

Dr. Mandl subsequently alludes to the influence of certain chemical substances, when mixed with fresh-drawn blood, in retarding the process of coagulation. These substances either precipitate the albumen and fibrine in the form of molecules, which do not afterwards coalesce, or they hold these elements in chemical solution. For example, by means of sulphuric acid we may obtain a solution of blood; but we have no right to say that, under such circumstances, we have prevented the coagulation of the fibrine.

With one short extract, which seems to us to suggest a useful distinction, we shall close our remarks on this subject. . . . "In studying the phenomena of the coagulation of the blood," says Dr. Mandl, "we ought to distinguish two moments or circumstances which are very different from each other:—the first is the solidification or precipitation of the dissolved fibrine; and the second is the contraction of this fibrine newly solidified. This contraction of the fibrine may take place in three or four minutes, or it may require several hours, according to the refrigeration, the evaporation, the force of the jet, the greater or less quantity of the blood drawn, the external temperature, the humidity of the air, &c. &c. Now, authors have always confounded this second moment, the contraction, with the first moment, the precipitation; and yet these two phenomena are as distinct from each other, as the precipitation of a salt and its crystallisation. When Hunter wished to explain the process of coagulation by attributing it to the contraction which is observed to take place in the fibrine as in muscular tissue, he used to say—this *must* contract, because it *does* contract; he thought only of the second act or moment of the process." We proceed now to offer some remarks

On the Formation of the Buffy Coat.—Without entering at all upon the

disputes of different chemists as to the nature of the buffy coat, we may merely state that, for all practical purposes, it may be admitted that it is part of the fibrine, held in solution in the blood, and deposited free from any admixture of red globules. The simple and beautiful experiment of Hewson proves this very distinctly: by removing with a spoon the upper colourless layer of the blood, he observed that the buffy coat is quickly formed in this decanted serum.

If we now inquire, what is the cause of this deposition of part of the pure fibrine of the blood on the surface of the clot, in certain forms of disease, a great number of most estimable authors will at once answer, "a greater than usually slowness in the act of coagulation." But another set of authors, whose names are entitled to as much credit, assert the very contrary, and distinctly maintain that this process actually goes on more quickly than usual, when the buffy coat is formed. For example, Andral and Forget, in their recent memoirs, state—"the separation of the blood into its solid and fluid portions takes place rapidly in plethora and in inflammatory diseases, as daily observation testifies."

We cannot, therefore, assent to the opinion that the formation of the buffy coat is owing to a retardation in the process of coagulation. Neither can we ascribe it, as some have done, to a mere excess in the quantity of the fibrine existent in the blood; for it has been amply shown by several writers, that not unfrequently the blood contains an unusual quantity of this constituent, and yet no buffy coat is formed on its surface.

M. Magendie, in his recent work on the physical phenomena of life, endeavours to explain the difficulty by ascribing the buffy coat to "one of the most simple and best understood physical phenomena, the relative gravity of the globules and of the fibrine; the former having a greater specific gravity than the latter, tend to fall to the bottom of the mass, and thus the fibrine collects, more or less exempt from them, at the surface."

This explanation may be correct; but certainly the premises on which it is founded have not been proved. We do not, for example, know for a certainty that there is any alteration in the specific gravities of the fibrine and of the globules; and we should also remember that it is part only of the fibrine that collects at the surface, while another part sinks down, and entangles in its meshes the globules.

M. Mandl proceeds to expound his own views on this question. The following extract will enable our readers to understand the scope of his researches.

... "Every one is agreed in admitting that in the formation of the buffy coat, the red globules are precipitated before the fibrine is coagulated. Now on what does the formation of this buffy coat depend? we answer, on all those circumstances which tend to favour this precipitation of the globules before the coagulation of the fibrine. Among these circumstances we may first mention the specific gravity of the serum. Whatever renders the serum lighter than usual, may give rise to the formation of the buffy coat, since the globules are then precipitated more quickly than usual. Again, the blood and the serum, when cooled, are more dense and heavy than when they are warmed; and, therefore, whatever tends to keep the blood either warm or to cause it to cool, will have the effect of on the one hand favouring, and on the other hand of retarding, the formation of the buffy coat. By attending to these circumstances, we can explain the results of numerous experiments which we find recorded in the writings of various authors, but which are otherwise not easily intelligible. The small interrupted stream from a small opening in a vein, the vessel into which the blood is received being shallow, cool, and held at a distance from the arm, a cool state of the atmosphere, &c. &c., are so many circumstances which are unfavourable to the *franche* formation of the buffy coat."

In illustration of his views, Dr. Mandl states that, from various experiments, we have reason to believe that the specific gravity of the blood in

inflammatory diseases is, in spite of a greater quantity of fibrine contained in it than usual, somewhat lower than in health. He appeals to the writings of Thackrah, Scudamore, Babington, and Davy, in proof of this assertion. Nasse, also, of Bonn, in his recent work—*Ueber das Blut*, 1836—distinctly states that the buffy coat is stronger in proportion as the specific gravity of the blood is less, and that it forms with much greater difficulty on blood that is very dense.

If it be now asked, to what is this diminution of the gravity of the blood in inflammatory diseases owing, M. Denis (*Etudes Chimiques sur le Sang*) tells us that there is, under such circumstances, a deficiency of the usual quantity of the albumen, and of the saline matters dissolved in the serum. This statement has not, however, been confirmed by the subsequent researches of MM. Andral and Gavarret, nor by those of M. Lecanu.

It is not improbable that the specific gravity of the globules themselves may vary a good deal under different circumstances; but as yet we have no satisfactory data on this subject.

Of Blood deficient in Fibrine.—In not a few diseases is the blood found in what has been called a dissolved state, more than usually liquid, its coagulum being soft and imperfectly formed, and its watery portion more than usually abundant. Such is the case in almost all malignant fevers, in scurvy, in purpura, &c. &c.

Let us consider the state of the blood in scurvy for a few minutes. It is admitted by all authors who have seen much of this disease, that there is not only a marked deficiency of its fibrine, but also a very considerable increase of the alkaline salts of the blood. Now what is the effect of these salts on the coagulation of healthy blood?—to retard, or even to prevent the process altogether. Dr. Mandl seems to think that we are not to infer, from this condition of the blood, that there is necessarily any considerable diminution in its normal proportion of fibrine, but only that this element is held in solution in such a manner that it is not easily precipitated from the other elements of the mass.

Our information is as yet very defective as to the existing proportions of the saline matters of the blood in those other diseases where the blood is known to be more than usually thin and diffuent. It is worthy of notice that the commixture of putrid animal matters with healthy blood has nearly the same effect upon it, as the addition of a quantity of an alkaline salt—viz. to impede the coagulation, and to cause the mass to remain more fluid and dissolved. Whether the blood becomes actually impregnated with any miasmatic particles in typhus and other malignant fevers, is not easily determined; but certainly there is nothing improbable in the supposition.

"We regret," says Dr. Mandl, "that we do not possess more complete analyses of the blood in typhoid fever. Is the fibrine actually diminished in quantity? and is the proportion of the saline ingredients, or of the albumen, which in our opinion produces analogous effects, at all increased? As yet we do not accurately know; but it may be readily understood, from what we have previously stated, that we must be on our guard in at once concluding that there must necessarily be a diminution of the actual quantity of the fibrine merely from the amount of it obtainable from the coagulum. M. Denis positively attributes the defect of coagulability and the other differences of the blood in typhoid fever to an augmentation of its saline ingredients."

Dr. Mandl next alludes to the alleged changes of the globules of the blood in disease.

"We shall now," says he, "inquire how far circumstances may influence the proportion or relative quantity of the globules in our examinations of the blood, and shall allude more particularly to that condition of the blood where the coagulum is found to be more than usually soft and unadherent, because it is precisely in such a case that experimenters have discovered an abnormal proportion of the globules.

"To determine the proportion of the globules in any quantity of blood, we divide it into two parts; in one of which we ascertain the quantity of the fibrine by stirring it briskly with a bunch of rods, and then deduct the weight of the fibrine so obtained from the weight of the coagulum, in the other portion of blood previously dried. Now, the fibrine being often unusually soft, it will be found to be very difficult to separate it completely; and hence the proportion of the globules will often be estimated as considerably higher than is normal, in consequence of a portion of the fibrine remaining in union with them.

"Again, we have previously seen that a firm and well-contracted coagulum contains a large proportion of globules, and that, as a certain quantity of them escape our analysis, the exact amount of this proportion is apt to be understated. On the contrary, in a coagulum which is soft and does not retain its globules so firmly, the proportion of these globules is apt to be estimated too highly. It results from our observations, that the more quickly that the fibrine coagulates, the less will be the quantity of it (the fibrine) that is found united or associated with the globules; and, on the contrary, the more slowly that the fibrine coagulates, the larger will be the quantity of it that is found with the globules: in other words, the relative proportion of the globules will be diminished in the first instance, and increased in the second. Now the presence of saline matters, which retard the coagulation of the blood, must produce on the one hand a soft coagulum, and on the other hand, an apparent increase in the proportion of the globules."

MM. Andral and Gavarret have, in their recent memoirs on the changes of the blood in various diseases, characterised the second class in their humoral nosology, as that in which the proportion of the fibrine of the blood is often diminished, while that of the globules is often increased. In this class they have arranged all the tribe of continued fevers upon what we consider to be very insufficient information. For other observers, as Dr. Reid Clanny and Dr. Jennings, have expressly stated that, according to their researches, there is a notable diminution in the proportion of the globules of the blood in these very diseases. The question, therefore, still remains undecided. Indeed much, very much, requires to be done before we can assure ourselves of having arrived at any exact conclusions on many of the apparently most simple questions connected with the physiological and pathological conditions of the blood."—*Archives Generales de Medicine*.

*On the Treatment of Hæmoptysis with Tartrate of Antimony.*¹—It might at first be presumed that the tartrate of antimony, in consequence of its vomitive action, should rather aggravate than arrest the spitting of blood from the lungs; but, from the observations of Stoll, it appears that this is really not the case. The following instance, among many others, related by the illustrious physician of Vienna, is well worthy of notice.

"I remember," says he, "to have had under my care a young Turk who had been seized with bilious fever and with profuse hæmoptysis. I immediately ordered him a vomit. The attendants were frightened at the prescription, and most anxiously awaited the effects of the medicine; being afraid that the hæmorrhage would be greatly increased by the effects of vomiting. But no sooner had the patient rejected a large quantity of bile from his stomach, than all traces of the hæmorrhage ceased, and he recovered without any return of it."

After citing numerous similar cases, Stoll remarks:—"Vomentes ne guttam sanguinis rejecerunt, quasi ipsa emesis hiantia pulmonum vasa quovis auxilio citius atque efficacius stringeret; et, vomitu jam peracto, aut nihil

¹ *Medico-Chirurgical Review*, July, 1841, p. 190.

omnino sanguinis, aut ejus nonnisi paucum quid per intervalla et ad exiguum tempus comparuit."

It should be stated that Stoll seems to have employed this mode of treatment only in cases of hæmoptysis accompanied with bilious symptoms, and seldom in those where there was any marked predisposition to pulmonary consumption.

Several writers subsequently have adopted the emetic treatment of hæmoptysis, and very different results seem to have been obtained in the hands of different physicians; for while some strongly approve of it, others as energetically condemn it. As a general remark, we may state that ipecacuanha has usually been preferred as an emetic in cases of pulmonary hemorrhage to any of the preparations of antimony; the former drug being supposed to possess a peculiar astringent property on the vessels of the lungs.

M. Nonat, one of the physicians of the Hôtel Dieu at Paris, however, has of late been using the tartrate of antimony in numerous cases of the disease, and reports most favourably of its effects. He has used it not only when the stomach and liver were evidently at fault at the same time, but also in many instances where there was no disturbance of the digestive organs, and where, therefore, the only indication was to arrest the discharge of blood from the chest.

Case.—A man, thirty years of age, was admitted into the Hôtel Dieu on the third day of an attack of hæmoptysis, which had resisted bleeding from the arm, and the use of other remedial means; it was the first attack of the disease which he had ever experienced.

The symptoms on his admission were well marked: frequent cough, with the expectoration of frothy sanguineous sputa; mucous and sub-crepitant *râle* over the summit of the right lung (percussion gave a dull sound at this spot); sense of heat in the chest, and dyspnœa; pulse frequent and rather strong. There were also symptoms of considerable gastric disturbance—such as a coated tongue, bitter taste in the mouth, nausea, &c.

An emetic of tartrate of antimony was ordered; the stomach symptoms were quickly relieved, and the spitting of the blood entirely ceased.

The *second* case is very similar, and the *third* one was still more severe.

A middle-aged woman was seized with a second attack of hæmoptysis, which had already continued for four days before M. Nonat saw her. The previous attack had occurred two years before, and had lasted for nine days before the hemorrhage entirely ceased. An antimonial emetic was at once ordered her; it caused her to vomit three or four times freely; at the expiry of a few hours, the sputa ceased to exhibit any trace of blood; and from this time they were nearly colourless.

After mentioning another successful case, M. Nonat then adduces the history of other two cases, in which the emetic practice failed altogether in arresting the sanguineous expectoration. In one of these, the patient was evidently labouring under tubercular phthisis in an advanced stage; the first dose of the emetic seemed to produce little or no effect on the pulmonary hemorrhage; but on being repeated a few days subsequently, it was distinctly increased, and considerable difficulty was experienced in subduing it.

M. Nonat candidly admits that the exhibition of emetics in a case of hæmoptysis, where we have reason to suspect ulceration of the lungs, is scarcely warrantable, and he very judiciously adds, that the practice is best suited to those cases of the disease in which the hemorrhage is of an active nature, and is accompanied with the *molimen hemorrhagicum*.—*Bulletin de Therapeutique*.

Remarks.—We have, for several years past, been in the habit of employing the tartrate of antimony in the treatment of hæmoptysis; but rather in small doses repeated at short intervals, than in full doses as an emetic. For example, a grain and a half, or two grains of the salt, may be dissolved in eight ounces of water, and half an ounce of syrup of poppies added to the solution; of this mixture, two table-spoonsful should be given every two or

three hours. We can confidently recommend this practice, both for its safety and its efficacy.—Rev.

*M. Trousseau on Tracheotomy in Chronic Diseases of the Larynx.*¹—Professor Trousseau has now performed this operation in 113 cases—in eight only of which was it resorted to for chronic disease of the larynx. He ascribes the frequent failure of the operation to the too small size of the canulæ employed before the time of M. Bretonneau, his revered preceptor. He himself has recommended and introduced the use of a dilator, which much simplifies the operation, renders the ligature of the divided blood-vessels almost unnecessary, and greatly facilitates the introduction of the canula into the larynx.

But although the operation may be simplified, it must always be regarded as of serious moment, and should never be resorted to without absolute necessity. For even when the death of the patient cannot be attributed to the operation, there is in many cases after its performance a marked tendency to the supervention of some acute disease of the lungs, which generally proves fatal.

Of the eight cases, in which M. Trousseau performed tracheotomy in consequence of chronic diseases of the larynx, two died from rapid pneumonia. He attributes this tendency to pulmonic inflammation, which is apt to follow the performance of the operation, to the *stasis* or congestion of the blood induced by the embarrassment of the respiration. It would seem, however, from his own statements, that this predisposition to a rapidly fatal pneumonia is not greatest in those cases where the dyspnoea has been most severe before the operation, and moreover, that in such cases the relief obtained is often as decided and as permanent as in other instances, where the difficulty of breathing has not been so great. He has reported several cases in which he has performed the operation successfully on children when the asphyxia was already complete, and life seemed to be utterly extinct; and to these may be added a very extraordinary instance which occurred in the practice of M. Bretonneau. This distinguished practitioner being called to operate on a child, had the misfortune of seeing it expire, to all appearance, before the preliminary incisions were completed. M. Bretonneau, however, without delay, opened the larynx, introduced a canula, and practised artificial respiration. At the end of a few minutes, the child began to breathe, and at length became completely resuscitated. A few days subsequently it was again seized with great difficulty of breathing; this, however, was ultimately relieved.

M. Trousseau relates a case which is very similar in many respects to this one. In June, 1839, Count B. consulted him for a loss of his voice. His constitution had been a good deal injured by irregularities of living, as well as by syphilitic disease; and for the preceding four years he had been subject to epileptic fits. His voice, for a year or two before it was entirely lost, had been thick and indistinct. M. Trousseau was inclined at first to consider the *aphonia* to be owing to a chronic inflammation of the larynx, and recommended the local application of a solution of the nitrate of silver, and of the insufflation of a powder consisting of calomel and sugar, along with the use of antiphlogistic remedies, blisters to the throat, &c.

No relief, however, was derived from this mode of treatment; indeed, the symptoms became worse. An active syphilitic treatment was therefore commenced; but in about a fortnight afterwards the patient was suddenly seized with a fit of suffocation. MM. Marjolin and Cruveilhier were called into consultation, and, as both these surgeons regarded the case as one of syphilitic disease, the same remedies were continued, along with the bleeding from the arm, and the insertion of a seton in the neck. The following

¹ Medico-Chirurgical Review, June, 1841, p. 191.

night and day, the symptoms of asphyxia were terrible, and, as the patient seemed every moment about to be suffocated, it was resolved to perform the operation of laryngotomy. Before, however, this could be done, the respiration had ceased, the pulsations of the heart could scarcely be felt or heard, and the patient had all the appearance of a dead man; no blood flowed from the wound, and when the canula was introduced, no respiratory movements followed.

By first compressing the chest with great force, and pulling down the edges of the ribs, so as to empty the lungs of the air they contained, and then drawing them up, as in a deep inspiration, the air entered the canula with force. These manœuvres were continued for nearly ten minutes, before the pulse at the wrist could be felt. The artificial respiration was persevered in for fifteen minutes more; and then the action of the heart and arteries was fairly re-established. Ten minutes later, the face was slightly convulsed; and soon afterwards an attack of general eclampsia succeeded, during which the air was drawn in with great violence into the chest, and this was followed by a state of stupor. In an hour and a half after the operation, the patient recovered his consciousness. From this moment, every thing went on well; the canula was changed twice every day, and the distress in breathing gradually became less and less. In the month of December (the operation had been performed in the middle of August) the patient appeared to be perfectly well, although he still wore the canula. At this period, the larynx was found to have acquired nearly double its usual volume, and the angle formed at the meeting of the two thyroid plates had become very obtuse. When the canula was closed, no air passed through the larynx from the throat. The diagnosis therefore was, that a tumour existed in the larynx, which would ultimately prove fatal. The deglutition began about this time to be impeded; and at length, in the following May, the poor patient died. A cancerous tumour was found on dissection.

The embarrassment in such cases is to determine what is the exact nature of the existent disease. M. Trousseau, however, lays it down as a maxim, that the operation is never useless, unless there be serious coexisting disease in some other part of the body at the same time; and even then that the life of the patient may be prolonged, although we cannot hope permanently to recover our patient. Whenever, therefore, the diagnosis of such a complication is uncertain, he thinks that we should always give the patient the chance of benefit, by performing the operation.

M. Trousseau insists much on using canulæ of a larger size than are usually employed. He uses a middle-sized one at first, and gradually increases the size, until the air ceases to make almost any noise passing through it during a deep inspiration.—*Journal des Connoiss. Med. Chirurg. and La Gazette Medicale.*

*Magendie's Method of treating Neuralgia.*¹—The remedy, *par excellence*, recommended by M. Magendie in the treatment of obstinate neuralgia of the face and other parts, is electro-acupuncture. The needles should be made of an unoxidable metal, and therefore those of platina are to be preferred. With respect to the mode of introducing them, it is better to push them at once, and with a sort of plunge, than to endeavour to drill them more slowly. In most cases, two needles are quite sufficient; one near the origin of the nerve, and the other near its termination or expansion. The former is then to be connected with the positive wire, and the latter with the negative wire of a galvanic apparatus. The patients usually describe the sensations experienced as if a spark or stream of lightning passed instantaneously along all the divisions of the nerve: at the same time the muscles of the part are thrown into contractions. The application is not to be continued

¹ *Medico-Chirurgical Review*, July, 1841, p. 202.

beyond a few cases, except in some severe cases, in which a continued stream must be maintained for some time. M. Magendie gives the preference to Clarke's electro-magnetic machine, as being altogether more convenient than any other for the purpose of electro-acupuncture.

If the neuralgic pain leaves one branch of a nerve to fix itself upon another branch, or upon another nerve, one or both needles are to be withdrawn, and should be inserted along the course of the nerve newly affected.

Several cases of supra-orbital neuralgia are adduced, in which the employment of electro-acupuncture speedily dispelled all suffering. The following one, in which the superior maxillary branch of the fifth pair was the affected nerve, may deserve to be noticed.

M. Thelin had been subject to frequent attacks of most severe neuralgia, affecting the superior maxillary nerve of the left side, when he first consulted M. Magendie. The pain in the gums, lips, cheek, and ala nasi, were insupportable; the patient could scarcely utter a word, and as for mastication, that was impossible. All methods of treatment had been tried, and all tried in vain. What with having many of his teeth extracted, and being leeches and blistered, and physicked for months and months at a time, his constitution had suffered severely. He consulted M. Magendie on the 5th of March, 1838: at one sitting of a few minutes the pain was *chassé*. Since that period, whenever the neuralgia returned, he repaired to M. Magendie, and always left him cured of his sufferings. It is now several months since he has had an attack.

In the second volume of our author's lectures on the nervous system, he has related two cases of severe neuralgia affecting the tongue; in one of which the disease had lasted for four, and in the other, for one year. . . . "A very fine platina needle was inserted into the trunk of the facial nerve, where it enters the parotid gland, and another was inserted into the affected side of the tongue. In this manner I was sure to act on the seventh and fifth pairs of nerves, since I punctured the trunk of the first and the lingual branch of the second. The needles were then connected with the wires of Clarke's machine. In one of the patients the pain in the tongue immediately ceased, but it fixed itself on the mental branch of the inferior maxillary nerve. The needle was forthwith withdrawn from the tongue, and inserted over the *foramen mentale*. The pain was driven from this point, but it was almost immediately transferred to the infra-orbital nerve. The needle was, therefore, introduced over the aperture from which it escapes. The enemy was thus pursued from one point to another, and ultimately was expelled before the patient left my house. In the other case, the pain, when driven from the tongue, took refuge in the sub-orbital nerve; driven from this, it returned to the tongue, whence it was again dislodged. Ultimately the patient was quite cured."

Certainly such practice is infinitely superior to that of attempting to divide each nerve, that becomes successively affected, as practised, for example, by M. Roux in a recent case, where he divided first the mental branch of the inferior maxillary, then the lingual, and, lastly, the sub-orbital nerve—the enemy, however, retreated to the ethmoidal, where the knife of the surgeon could not reach him.

"In such a case," says M. Magendie, "I pursue the pain, not with the bistoury, but with the galvanic current. Even should it fix itself upon the ethmoidal nerve, I should insert one needle into the nostril, and another into the orbit, along the upper part of its internal wall, at the place where the external nasal traverses it, thus attacking it both near its origin and its termination."—*Gazette Medicale*.

Remark.—We have no doubt that electro-acupuncture will relieve the suffering in many cases of neuralgia which are unconnected with structural disease of any part; but it is more than probable that the relief will be only temporary, unless appropriate constitutional means are employed at the same time.—*Rev.*

*M. Biot on the Diagnosis of Diabetes Mellitus by the Optical Appearances of the Urine.*¹—M. Biot, the distinguished natural philosopher, informs us that, Dr. Mandl having inquired of him, if by the observation of the rotatory power the presence of sugar could be detected in the urine, he has performed numerous experiments with this view on the urine of patients labouring under diabetes mellitus. Chemistry enables us to obtain from such urine a substance, which is fermentable, and whose characters of solubility, of fusibility, and of crystalline appearance, are in every respect quite identical with those of solidified sugar from the grape, and of that produced by the prolonged action of sulphuric acid on starch. Now this fermentable matter, so obtained, is sometimes sweet or saccharine to the taste, and at other times it is altogether insipid. Hence some authors, as M. Bouchardat, in his excellent memoir in the *Revue Medicale* for June, 1839, have been inclined to conclude that there are two kinds of sugar in diabetic urine—one sapid and the other insipid. It is, however, more probable that tastelessness of the fermentable extract is owing to the union of the saccharine substance with other ingredients of the urine, such as the lactate of urea, the chloride of sodium, and extractive matter: this opinion is confirmed by the results of optical examination. For the purification of the insipid product, by repeatedly washing it with alcohol, leaves as a residue a sapid sugar, which is quite analogous in appearance with the sugar of fecula, susceptible of fermentation like it, and which exercises a rotatory power of the same character.

"My first care," says M. Biot, "was to ascertain if healthy urine ever presented traces of rotatory power. The result of my observations has been that it does so never, or at least very rarely, and then accidentally and scarcely perceptible. I long ago satisfied myself that urea, which enters so abundantly into the composition of healthy urine, exhibits no appreciable rotatory power. I had also found in diabetic sugar a rotatory power of the same kind (*de meme sens*) and of the same intensity as the sugar of starch—a fact which accords with the identity of ponderal composition, which chemistry attributes to them."

..... "I examined the urine of a diabetic patient under the care of M. Breschet. He had been for some time subjected to a diet of animal food chiefly, and had derived so much benefit from it, that he was considered to be on the road to a recovery, although still affected with *diabetism*. His urine exhibited a power of considerable rotation, directed towards the right hand of the observer, consequently in the same direction as the solid sugar of diabetic urine obtained by evaporation. Its deviation, observed immediately with the naked eye through a tube of 347^{mm}, 6 in length, was $+ 10^{\circ}$, 6.² In a case under the care of M. Rayer, the rotatory power of the urine, observed in a tube of the same length, exhibited a deviation to the right hand of 18° 5. This urine contained nearly twice as much saccharine matter as that of M. Breschet's patient. If this sugar might be considered as free, or as combined with substances which do not alter its rotatory power, the urine must have contained from 110 to 120 *grammes* in the *litre*—a proportion which does not exceed what M. Bouchardat has met with in extreme cases of the disease.

"But to estimate in this way, with exactitude, the ponderable quantity of saccharine matter by the mere extent of the deviation observed through a liquid medium, it is necessary that the two conditions now specified should have been previously determined by the chemist. It is for this reason that, until such analytical examination has been made, I restrict myself at present to merely suggesting the optical diagnosis as a means of comparison."

M. Biot then mentions some other circumstances, which confirm the

¹ *Medico-Chirurgical Review*, July, 1841, p. 203.

² We give these figures as they stand in the French memoir, as we might commit an error in reducing them to an English standard.

opinion that diabetic sugar is strictly identical with that obtained from fecula.

..... "M. Rayer's patient was seized with a pneumonia, while under treatment for the diabetes. The animal diet was, therefore, obliged to be suspended. The urine, under the influence of the inflammatory action, became of a deeper colour, and was found to contain much less sugar. Five days after the invasion of the inflammatory symptoms, and seven days after the suspension of animal food, the urine was found to exhibit no traces whatever of rotatory power: consequently all secretion of sugar had ceased.

"How much more easy it would have been to have treated this case, had the poor fellow come to the hospital at the commencement of his disease, when the simple inspection of his urine might have proclaimed at once the danger of his situation!

"In another case from the practice of M. Rayer, that of a child in whom there was a copious diuresis, accompanied with extreme thirst, &c. I examined the urine optically, but could not discover any sign of rotatory power. Now on evaporating it, we found that there was exceedingly little residue left, and that this was not fermentable. The optical and the chemical examination corresponded, therefore, in their results. It is, without doubt, easy in such a case to ascertain the nature of the urine by evaporating it, and testing the residue; but it is still more easy to introduce some of the urine into a tube, and arrive at the same conclusion by simple inspection."

M. Biot suggests to physicians, that by following this plan, the optical examination of the animal fluids, they might ascertain whether the serum of the blood, &c. in diabetes contains any free saccharine matter. He has already found that the serum of healthy fluid has a rotatory power directed to the left hand—in consequence of its containing albumen, which acts in this direction. If the serum contained any sugar, we may expect that its rotatory power should be considerably weakened, or perhaps altogether changed. A similar occurrence may be expected in the urine itself, when it has become albuminous. These are questions well deserving the immediate attention of the scientific physician.

M. Biot concludes his remarks with these words:—

"The optical characters of the urinary secretion will furnish an easy, sure, and exact means of diagnosis, to enable us to ascertain in a moment its diabetic condition. In this way, we may recognise the commencement of the disease from its earliest stage, detect at once its different peculiarities, and follow it through all its phases. It will then be easy to discover the immediate effects of regimen and diet, as well as of any medicinal agents that may be administered."—*Gazette Medicale*.